

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method for detecting or quantifying a target nucleic acid on a microarray having a plurality of sample detection sites, comprising:

(a) hybridizing the target nucleic acid to a microarray-bound biomolecule probe, forming an immobilized RNA:DNA hybrid ~~complex~~;

(b) hybridizing a detectably-labeled biomolecule probe to a non-hybridized portion of the microarray-bound biomolecule probe, forming an immobilized RNA:DNA hybrid complex comprising the target nucleic acid, a detectably-labeled biomolecule probe, and a microarray-bound biomolecule probe;

(c) detecting the target nucleic acid by measuring the immobilized RNA:DNA hybrid complex by binding the complex to a detectable antibody specifically reactive with ~~[[the]]~~an RNA:DNA hybrid;

(d) detecting the detectably-labeled biomolecule probe; and

(e) repeating steps (a) - (c) on each of the plurality of sample detection sites, wherein the detectably-labeled biomolecule probe is distinguishable from the detectable antibody.

2. (original) The method according to claim 1, wherein the repeating steps are carried out sequentially.

3. (original) The method according to claim 1, wherein the repeating steps are carried out simultaneously.

4. (currently amended) A method for detecting or quantifying a target nucleic acid on a microarray having a plurality of sample detection sites, comprising:

(a) hybridizing a portion of the target nucleic acid to a microarray-bound biomolecule probe, forming an immobilized RNA:DNA hybrid;

(b) hybridizing a non-hybridized portion of the target nucleic acid to a detectably-labeled complementary nucleic acid probe, forming an immobilized RNA:DNA hybrid complex comprising the target nucleic acid, a detectably-labeled biomolecule probe, and a microarray-bound biomolecule probe; and

(c) detecting the target nucleic acid by measuring the immobilized RNA:DNA hybrid complex by binding the complex to a detectable antibody specifically reactive with [[the]]an RNA:DNA hybrid and the detectably-labeled biomolecule probe; and

(d) repeating steps (a) - (c) on each of the plurality of sample detection sites.

5. (original) The method according to claim 4, wherein the repeating steps are carried out sequentially.

6. (original) The method according to claim 4, wherein the repeating steps are carried out simultaneously.

7. (currently amended) A method for detecting or quantifying a target nucleic acid on a microarray having a plurality of sample detection sites, comprising:

(a) hybridizing the target nucleic acid to a complementary nucleic acid probe, forming an RNA:DNA hybrid;

(b) hybridizing a non-hybridized portion of the target nucleic acid to a microarray-bound biomolecule probe, forming an immobilized RNA:DNA hybrid complex comprising the target nucleic acid, a detectably-labeled biomolecule probe, and a microarray-bound biomolecule probe; and

(c) detecting the target nucleic acid by measuring the RNA:DNA hybrid complex by binding the complex to a detectable antibody specifically reactive with [[the]]an RNA:DNA hybrid; and

(d) repeating steps (a) - (c) on each of the plurality of sample detection sites.

8. (original) The method according to claim 7, wherein the repeating steps are carried out sequentially.

9. (original) The method according to claim 7, wherein the repeating steps are carried out simultaneously.

10. (previously presented) A method for detecting or quantifying a target nucleic acid on a microarray having a plurality of sample detection sites, comprising:

(a) hybridizing the target nucleic acid to an immobilized reagent-modified nucleic acid to form an immobilized reagent-modified RNA:DNA hybrid, wherein the immobilized reagent-modified nucleic acid is bound to an immobilized reagent-binding molecule;

(b) detecting the target nucleic acid by measuring the immobilized RNA:DNA hybrid using a detectable antibody specifically reactive with the RNA:DNA hybrid; and

(c) repeating steps (a) - (b) on each of the plurality of sample detection sites.

11. (original) The method according to claim 10, wherein the repeating steps are carried out sequentially.

12. (original) The method according to claim 10, wherein the repeating steps are carried out simultaneously.

13. (previously presented) A method for detecting or quantifying a target nucleic acid on a microarray having a plurality of sample detection sites, comprising:

(a) hybridizing a target nucleic acid to a microarray-bound biomolecule probe, forming an RNA:DNA hybrid;

(b) hybridizing a non-hybridized microarray-bound biomolecule to a complementary region of a detectably-labeled biomolecule probe, wherein said non-hybridized microarray-bound biomolecule probe is different from the microarray-bound biomolecule probe of step (a);

(c) detecting the target nucleic acid by measuring the RNA:DNA hybrid by binding the RNA:DNA hybrid to a detectable antibody specifically reactive with the RNA:DNA hybrid;

(d) detecting the detectably-labeled biomolecule probe; and

(e) repeating steps (a) - (c) on each of the plurality of sample detection sites.

14. (original) The method according to claim 13, wherein the repeating steps are carried out sequentially.

15. (original) The method according to claim 13, wherein the repeating steps are carried out simultaneously.

16. (previously presented) A kit for the detection of an RNA:DNA hybrid comprising:

- a) a microarray solid support having a plurality of sample detection spots, wherein said sample detection spots are immobilized nucleic acids, said immobilized nucleic acid being complementary to a target nucleic acid or part thereof, or said immobilized nucleic acid being complementary to part of an RNA:DNA hybrid, or said immobilized nucleic acid being complementary to a nucleic acid probe;
- b) a hybridization buffer;
- c) a wash buffer;
- d) a solution comprising an RNase and a detection antibody specifically reactive with an RNA:DNA hybrid; and
- e) a biomolecule probe, wherein said probe is a detectably-labeled biomolecule or nucleic acid probe that hybridizes to a portion of the immobilized nucleic acid of (a) but not to that portion complementary to the target nucleic acid, or wherein said probe is a nucleic acid probe complementary to a target nucleic acid.

17. (original) The kit according to claim 16, wherein the detection antibody is a labeled RNA:DNA hybrid-specific antibody.

18. (original) The kit according to claim 16, wherein the detection antibody is an RNA:DNA hybrid-specific antibody and a labeled RNA:DNA hybrid antibody-specific antibody

19. (original) The kit according to claim 17, wherein the RNA:DNA hybrid-specific antibody is monoclonal.

20. (original) The kit according to claim 18, wherein the labeled RNA:DNA hybrid antibody-specific antibody is monoclonal.

21. (original) The kit according to claim 17, wherein the RNA:DNA hybrid-specific antibody is polyclonal.

22. (original) The kit according to claim 18, wherein the labeled RNA:DNA hybrid antibody-specific antibody is polyclonal.

23. (previously presented) A kit for detecting or quantifying a target nucleic acid on microarray, comprising:

- a) a microarray solid support having a plurality of sample detection spots, wherein said sample detection spots are immobilized biomolecule probes complementary to a target nucleic acid or part thereof;
- b) a detectably labeled biomolecule probe that hybridizes to a portion of the immobilized biomolecule probe of (a) but not to that portion complementary to the target nucleic acid; and
- c) a solution comprising an RNase and a detection antibody specifically reactive with an RNA:DNA hybrid.

24. (previously presented) A kit for detecting or quantifying a target nucleic acid on microarray, comprising:

- a) a microarray solid support having a plurality of sample detection spots, wherein said sample detection spots are biomolecule probes complementary to a target nucleic acid;
- b) a detectably-labeled nucleic acid probe complementary to a non-hybridized portion of a target nucleic acid that has hybridized to the biomolecule probe of (a); and
- c) a solution comprising an RNase and a detection antibody specifically reactive with an RNA:DNA hybrid.

25. (previously presented) A kit for detecting or quantifying a target nucleic acid on microarray, comprising:

- a) a nucleic acid probe complementary to a target nucleic acid;
- b) a microarray solid support having a plurality of sample detection spots, wherein said sample detection spots are biomolecule probes complementary to a non-hybridized portion of the target nucleic acid after it has hybridized to the nucleic acid probe of (a); and
- c) a solution comprising an RNase and a detection antibody specifically reactive with an RNA:DNA hybrid.

26. (previously presented) A kit for detecting or quantifying a target nucleic acid on microarray, comprising:

- a) a microarray solid support having a plurality of sample detection spots, wherein said sample detection spots are biomolecule probes complementary to a target nucleic acid and biomolecules complementary to a detectably-labeled biomolecule probe;
- b) a detectably-labeled biomolecule probe complementary to a solid-support bound biomolecule of (a); and
- c) a solution comprising an RNase and a detection antibody specifically reactive with an RNA:DNA hybrid.